LIE-DOWN MASSAGER

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BACKGROUND OF THE INVENTION

The invention relates generally to a massaging device. More particularly, the present invention relates to an improved lie-down massager capable of efficiently treating bodily malfunctions such as back pain and gastrointestinal weakness by applying a therapeutic massaging treatment along the back and neck of a patient lying down on the massager whose massaging bumps move horizontally and vertically along the patient's spinal cord and neck in which the vertical movement of the massaging bumps optimally coordinates with a widthwise reciprocation to repeatedly approach to and distance from each other.

Conventional bed or mat type massaging devices employ a spring mechanism for vertically moving massaging bumps. As disclosed USP 6,454,732, a spring mechanism allows the massaging bumps to gently move up and down. However, when it comes to therapeutic effects, the spring mechanism proves too soft to push up the massaging bumps when stronger pressure is required, because tension of

springs applies equally to patients lying on the massaging device regardless of patient's requirements.

A demand is to adopt a reliable mechanism demonstrating a steady and robust therapeutic effects while harmonizing the vertical movement with a widthwise reciprocation between the massaging bumps.

SUMMARY OF THE INVENTION

The present invention is contrived to overcome the conventional disadvantages. Accordingly, an object of the invention is to provide a lie-down massager that improves therapeutic effects by harmonizing a vertical reciprocation with a widthwise reciprocation of massage bumps.

Another object is to optimize spinal and neck massage effects by allowing the massage bumps to repeatedly become near to and away from each other, thereby enabling patients to receive a widespread massage along the backs and necks of the patients. A further object is to improve product reliability and customer satisfaction by reliably synthesizing vertical, lengthwise and widthwise reciprocations of the massage bumps.

To achieve these and other objects, the lie-down massager according to the present invention comprises a

base frame having an elongated top panel with an elongated top opening formed centrally and lengthwisely through the elongated top panel. A rider is provided below the elongated top panel of the base frame to make a horizontally reciprocal movement relative to the base frame, and a lifter liftedly engaged to the rider to make a vertically reciprocal movement relative to the rider. A massage member is fixed downwardly to the lifter, and first and second supports are horizontally aligned along a top portion of the massage member. Another member is also provided for allowing the first and second supports to repeatedly approach to and distance from each other within the elongated opening. Here, massage bumps attached atop the first and second supports, and a pad covering the massage bumps and the elongated opening of the base frame.

In an embodiment, a pair of pulleys are linked by a rope and respectively mounted in a front end portion and a rear end portion of the base frame so that a predetermined portion of the rope is fixedly attached to the rider. In this construction, the pulley rotation enables the rider to generate a horizontally reciprocal movement along the elongated top opening. Alternately, there may be provided a pair of rack gears parallel to each other and provided below the elongated top panel

where a rider is provided with a roller gear perpendicular to the rack gear so that the roller gear is rotatably mounted on the rack gears to allow the rider to make a horizontally reciprocal movement along the rack gears. Preferably, the rider is maintained below the elongated top panel.

The massager further includes a pair of roller coasters provided parallel to each other and attached to the base frame to each have a substantially waved top surface, and a coasting member liftedly engaged between the lifter and the rider where a coaster guide roller is formed outwardly extending from each side surface of the coasting member. The coaster guide roller enables the coasting member to make a roller coasting movement on and along the waved top surfaces of the roller coasters. Elongated guides downwardly extend from the coasting member, and guide bushes are upwardly formed on the rider to releasably receive the elongated guides so as to stabilize the roller coasting movement of the coasting member along the roller coasters and the lifting of the coasting member from the rider.

A gear shaft is rotatably engaged to the massage member and partitioned to first and second halves respectively threaded symmetrical to each other such that the first support carried on the first half either

approaches to or distances from the second support carried on the second half of the gear shaft in accordance with a rotating direction of the gear shaft where a first motor connected to the gear shaft to control the rotation of the gear shaft. Also, rider guide rollers are provided on each side of the rider to become rollably engaged in the base frame to guide the horizontally reciprocal movement of the rider. In a better version, the first and second supports repeatedly approach to and distance from each other in perpendicular to the horizontally reciprocal movement of the rider. The vertical reciprocation of the lifter is preferably implemented by a gear-motor application, a gear-chain mechanism or a cam-motor application.

The massage bumps each formed in hemisphere are partitioned to first and second pairs where the first pair massage bumps are formed atop the first support and the second pair massage bumps are formed atop the second support. Here, each pair bumps are aligned parallel to the direction of the rider reciprocation. The massage bumps each include a heater that is a heating lamp generating heat and infrared rays.

A heating member is selectively spread in the top panel of the base frame.

Advantages of the present inventions are numerous. Most of all, the lie-down massager according to the present invention optimally combines a lengthwise reciprocation of massage bumps with a vertically reciprocal movement and with a widthwise reciprocation of the massage bumps for thereby enabling an evenly widespread massaging on the back and neck of a patient lying on the massager.

Further, the combination of the triple reciprocations results in a conspicuous therapeutic effects by realizing a virtually total back massaging while lying on the bed or mat type massager. Also, the massager maximally synthesizes multiple reciprocations in the movement of the massage bumps while relaxing on the bed or mat type massager, thereby enhancing product reliability and customer satisfaction.

Although the present invention is briefly summarized, the full understanding of the invention can be obtained by the following drawings, detailed description and appended claims.

BRIEF DESCIPTION OF THE DRAWINGS

These and other features, aspects and advantages of the present invention will become better understood with reference to the accompanying drawings, wherein:

FIG. 1 is a perspective view showing a mechanism of a lie-down massager according to the present invention;

FIG. 2 is a view showing the lie-down massager with a patient lying thereon according to the present invention;

FIG. 3 is a plan view showing the lie-down massager without the patient in FIG. 2;

FIGS. 4A-4D are views showing vertical and widthwise reciprocations implemented in the present invention;

FIG. 5 is a perspective view showing an embodiment of the present invention; and

FIGS. 6A-6F are views showing applications of a lifter in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a brief construction of a lie-down massager **10** according to a preferred embodiment of the present invention. FIG. 2 shows the lie-down massager **10** with a patient lying thereon, and FIG. 3 shows a plan view of the massager **10** excluding the patient. As shown therein, the lie-down massager **10** includes a base frame **12** in a bed type or a mat type. The base frame **12** includes an elongated top panel **14** with a heating member **15** spread in the top panel **14** to further comfort the patient on the massager **10**. An elongated opening **16** is

formed centrally and lengthwisely through the elongated top panel **14**. The heating member **15** is preferably formed around the elongated opening **16** to generate heat rays at a predetermined temperature. The massager **10** includes a rider **18** and a lifter **20**. The lifter **20** is liftedly engaged to the rider **18** to make a vertically reciprocal movement relative to the rider. The rider **18** is provided below the elongated top panel **14** of the base frame **12** to make a horizontally reciprocal movement relative to the base frame **12**. Here, a guide member **22** is movably engaged between the base frame **12** and the rider **18** so as to enable the rider **18** to make a horizontally reciprocal movement along the elongated top panel **14**. Here, the guide member **22** may be formed of either a rope-pulley mechanism in FIG. 1 or a rack gear mechanism in FIG. 5.

To improve massaging effects, a massage member **24** is fixed downwardly to the lifter **20**. Along a top portion **26** of the massage member **24** are horizontally aligned first and second supports **28, 30**. There is also provided a means **32** for allowing the first and second supports **28, 30** to repeatedly approach to and distance from each other within the elongated opening **16**. The means **32** includes a gear shaft **34** rotatably engaged to the massage member **24** and partitioned to first and second halves **33, 35** respectively threaded symmetrical to each other by a

shaft center **36** such that the first support **28** carried on the first half **33** either approaches to or distances from the second support **30** carried on the second half **35** of the gear shaft **34** in accordance with a rotating direction of the gear shaft **34**. The shaft center **36** is connected to a first motor **38** to control the rotation of the gear shaft **34**, preferably by a belt **40**. The belt **40** may be a timing belt, and the first motor **38** may be a geared motor.

Selectively, the means **32** may be a pinion-rack mechanism where a pinion engaged to a motor controls a relative movement of rack gears connected to the supports **28, 30** so that a bi-directional rotation of the pinion gear enables the supports **28, 30** to repeatedly approach to and distance from each other. The means **32** may also be implemented by adopting a spring restitution for the approaching motion and a gear-motor mechanism for the distancing motion of the supports **28, 30**.

In order to implement a therapeutic massage operation, a plurality of massage bumps **42** are attached atop the first and second supports **30**. The massage bumps **42** are provided to move along the elongated opening **16** of the elongated top panel **14** of the base frame **12**. So the massage bumps **42** are directed to massage the back and neck of the patient lying on the top panel **14** of the base frame **12**. Here, a pad **44** may be provided to cover the

massage bumps **42** and the elongated opening **16** of the base frame **12**. The massage bumps **42** are preferably partitioned to first and second pairs so that the first pair bumps are aligned parallel to the second pair bumps. The massage bumps **42** may each include a heater **46** preferably in form of a heating lamp. Selectively, the heating lamp for the heater **46** may be formed to generate heat and infrared rays to maximize therapeutic effects. In a preferred version, the massage bumps **42** are each formed in hemisphere. Specifically, the massage bumps **42** are partitioned to first and second pairs, wherein the first pair massage bumps are formed atop the first support **28** and the second pair massage bumps are formed atop the second support **30** so that each pair bumps **42** are aligned parallel to the direction of the rider reciprocation.

As shown back in FIG. 1, the massager **10** optimally combines a plurality of reciprocal movements. First, the rider **18** makes a lengthwise reciprocation along the top panel **14**, for example, by a pulley mechanism (**AA**) so that the massage bumps **42** to progressively massage along the back and neck of the patient lying on the massager **10**. Second, the rider **20** serves to make a vertical reciprocation (**BB**) so as to efficiently control the push-up of the massage bumps **42** on the back and neck of the patient, whereby the patient is allowed to optimize the

push-up or upward pressure of the massage bumps **42** depending on the patient.

For example, a skinny woman with a back pain feels painful when the massage bumps **42** pushes up or massage her back to an extent in which a masculine man feels appropriate. Third, the massage bumps **42** make a horizontally reciprocal pulsation alternately moving toward or away (**CC**) from each pair bumps **42** so that the massage bumps **42** become evenly applied to a patient's back portion between the spinal cord and sides. Further, since each of the three reciprocations are motor-powered, the user can easily control each reciprocal operation, for example, by using a hand-held control (not shown). That is, the first and second supports **28, 30** become approached to and distanced from each pair massage bumps **42** in accordance with the first motor **40**, the lifer **20** is controlled by a second motor **48**, and the rider **18** is controlled by a third motor **50**.

FIGS. 4A-4D respectively show a relative mechanism of the lifter **20** and the massage member **24**. As shown therein, while the lifter **20** makes an upward or downward stroke, the first and second supports **28, 30** either approach to or distance from each other depending upon the patient's control. Specifically, the first and second supports **28, 30** repeatedly approach to and distance from

each other in perpendicular to the horizontally reciprocal movement of the rider **18**. As an example in FIG. 4A, a roller gear **52** powered by the second motor **48** is engaged to a rack gear **54** to vertically reciprocate the lifter **20**. Likewise, in order to implement the vertical reciprocation, the lifter **20** may employ a mechanism selected from a pinion-rack mechanism powered by a motor, a gear-motor application, a gear-chain mechanism powered by a motor, a cam-motor application, and other vertical reciprocation applications as illustrated in FIGS. 6A-6F. That is, FIGS. 6A, 6B and 6E are examples of gear-applied lifter **20**, and FIG. 6C employs a cam **21** to generate a vertically reciprocal movement of the lifter **20**. FIG. 6F shows the lifter **20** employing a combination of a gear set **23** and a chain **25** for the vertical reciprocation of the lifter **20**.

In order to facilitate the lengthwise reciprocation of the rider **18**, the guide member **22** may be incorporated in a pair of pulleys **56** linked by a rope **58** and respectively mounted in a front end portion **60** and a rear end portion **62** of the base frame **12**. A predetermined portion **63** of the rope **58** is fixedly attached to the rider **18** so that the pulley rotation enables the rider **18** to generate a horizontally reciprocal movement along the elongated top opening **16**. There is also provided the

pulley motor **50** that controls one of the pulleys **56**. In a preferred version, the pulley motor **50** is provided adjacent to the pulley **56** provided in the rear end portion **56** of the base frame **12**. Preferably, the pulleys **56** are relatively twisted by **90** degrees against each other to facilitate the horizontal reciprocation of the rider **18**.

Meanwhile, as shown in FIG. 5, when the guide member **22** is incorporated in the rack gear mechanism, the guide member **22** comprises a pair of side rack gears **66** parallel to each other and lengthwisely provided below the elongated top panel **14** of the base frame **12**, a roller gear **68** perpendicular to the side rack gears **66**, and a motor **70** to power the roller gear **68**. Here, the roller gear **68** is rollably connected to the rider **18** and rotatably mounted on the side rack gears **66**. In this construction, the roller gear **68** is rotatably mounted on the rack gears **66** to allow the rider **18** to make the horizontal reciprocation along the rack gears **66** where the rider **18** is also maintained below the elongated top panel **14** of the base frame **12**. Here, a plurality of guider rollers **72** may be formed from each side of the rider **18** to further stabilize the horizontally reciprocal movement of the rider **18** along the rack gears **66**. The

roller gear **68** is powered by the second motor **70** fixed to the rider **18**.

For a better performance, a pair of roller coasters **80** parallel to each other and to the rack gears **66** are attached to the base frame **12** to allow the horizontally moving rider **18** to pass therebetween. The roller coasters **80** are each formed to have a substantially waved top surface **82**. In this construction, a coasting member **84** having a bottom surface **86** and side surfaces **88** is liftedly engaged to the rider **18**. In a preferred version, the waved top surfaces **82** of the roller coasters **80** each substantially form a curvature of a human spinal cord. Also, a guide roller **90** is formed outwardly extending from the side surfaces **88** of the coasting member **84**. Here, the guide roller **90** on each of the side surfaces **88** enables the coasting member **84** to make a roller coasting movement on and along the waved top surfaces **82** of the roller coasters **80** while being engagedly lifted from the rider **18** which makes the horizontally reciprocal movement. Preferably, the coasting member **84** is formed in a container type. On the other hand, elongated guides **92** are provided extending from the bottom surface **86** of the coasting member **84**, and second guide bushes **94** are upwardly formed on the rider **18** to releasably receive the second elongated guides **92** so as to stabilize the roller

coasting movement of the coasting member **84** along the roller coasters **80** and the lifting of the coasting member **84** from the rider **18**.

As discussed above, an advantage of the present inventions is that the lie-down massager **10** according to the present invention optimally combines a lengthwise reciprocation of massage bumps **42** with a vertically reciprocal movement and with a widthwise reciprocation of the massage bumps **42** for thereby enabling an evenly widespread massaging on the back and neck of a patient lying on the massager.

In addition, the combination of the triple reciprocations substantially alleviate pains resulting from the conventional massager using a predetermined solid pattern along which the rider **18** follows without a vertically allowable resilience, thereby improving product reliability. Further, the coasting member **84** working with the roller coasters **80** to realize an additional lifting by utilizing the horizontally reciprocal movement of the rider **18** enables the massaging bumps **32** to continue a smooth, steady and robust massaging on the patient together with the triple reciprocations, thereby substantially improving massaging effect and subsequently maximizing customer satisfaction.

Although the invention has been described in considerable detail, other versions are possible by converting the aforementioned construction. Therefore, the scope of the invention shall not be limited by the specification specified above and the appended claims.